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ABSTRACT

Disputing and talking out behaviors of individual pupils and entire classroom groups in special education classes and regular classes from white middle class areas and from all Negro disadvantaged areas ranging from the first grade to junior high school were studied. The classroom teacher in each case acted as the experimenter and primary observer. Various means of recording behaviors were used and reliability of observation was checked by an outside observer, another teacher, a teacher-aide, a student, or by using a tape recorder. Observation sessions varied from fifteen minutes to an entire school day. After baseline rates were obtained, extinction of inappropriate disputing or talking out behaviors and reinforcement of appropriate behavior with teacher attention, praise, and in some cases a desired classroom activity or a surprise at the end of the week brought a decrease in undesired verbalizations. A reversal of contingencies brought a return to high levels of inappropriate talking, with a return to low levels when reinforcement for appropriate talking was reinstated. The experiments demonstrated that teachers in a variety of classroom settings could obtain reliable observational records and carry out experimental manipulations successfully using resources available in most schools. (Author)

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Abstract

Disputing and talking out behaviors of individual pupils and entire classroom groups in special education classes and regular classes from white middle-class areas and from all Negro disadvantaged areas ranging from the first grade to junior highschool were studied. The classroom teacher in each case acted as the experimenter and primary observer. Various means of recording behaviors were used and reliability of observation was checked by an outside observer, another teacher, a teacher-aide, a student, or by using a tape recorder. Observation sessions varied from 15 min. to an entire school day. After baseline rates were obtained, extinction of inappropriate disputing or talking out behaviors and reinforcement of appropriate behavior with teacher attention, praise and in some cases a desired classroom activitiy or a surprize at the end of the week brought a decrease in undesired verbalizations. A reversal of contingencies brought a return to high levels of inappropriate talking with a return to low levels when reinforcement for appropriate talking was reinstated. The experiments demonstrated that teachers in a variety of classroom settings could obtain reliable observational records and carry out experimental manipulations successfully using resources available in most schools.

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Modification of Disputing and Talking Out Behaviors With The Teacher as Observer and Experimenter[1]

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A number of studies have been reported in which the systematic application of contingent teacher attention has been shown to be an effective means of modifying inappropriate school behavior. Hall, Lund and Jackson (1968) and Broden, Bruce, Mitchell, Carter and Hall (1969) demonstrated that teacher attention could be used effectively to modify disruptive and dawdling behaviors of individual elementary school pupils. Hall, Panyon, Rabon and Broden (1968) showed that increasing teacher attention contingent on appropriate behavior was effective in helping beginning teachers to gain classroom control. Thomas, Becker and Armstrong (1968) and Madsen, Becker and Thomas (1968) showed that positive teacher responses were more effective than reprimands or rules in maintaining appropriate classroom behavior. Broden, Hall, Dunlap and Clark (in Press) showed that social reinforcement was less effective than a token reinforcement system in increasing study behavior of junior highschool special education students.

While these studies have demonstrated that systematic teacher attention can be effective in improving classroom behavior, all of them employed the use of outside experimenters and observers to direct the experiments and to record and measure the behaviors. The present studies, in contrast, were carried out by teachers who acted as both the experimenters and the primary observers of the behaviors

modified. They were members of a University of Kansas graduate class on the management of classroom behavior taught by the senior author.

The behaviors selected for modification were primarily "talking out" behaviors which disrupted the class and were disturbing to the teachers. The fact that this class of behaviors is of concern to teachers is born out by the fact that 14 teachers out of a total of 60 selected talking out, arguing, or other verbal outbursts as a behavior to modify when given the option to select a disturbing behavior they wished to change.

Experiment I

Subject and Setting: The subject, Mike, was a fifteen year old boy in a self contained classroom of fifteen junior highschool educable mentally retarded pupils. He was paralyzed from the waist down due to a birth defect. He reportedly received a great deal of attention from other students and teachers and had been described as stubborn, self-centered, belligerent and "spoiled."

Observations: The behavior recorded was arguing or disputing with the teacher. The teacher recorded one incident of disputing behavior whenever Mike argued with the teacher, failed to comply with a teacher request within ten seconds, or shook his head in a negative manner during discussion of assignments.

Reliability of observation was computed by comparing the teacher's record with that made by a teacher-aide who observed for two hours on thirteen different occasions distributed throughout the study. The Reliability of the records for these observation sessions was found by dividing the number of disputes recorded

by the observer with the lesser number by that of the observer with the greater. The mean percentages of agreement found for the various phases of the experiment ranged from 84% to 100%.

Baseline$_1$: Prior to employment of experimental procedures, a nine day baseline record of disputes was recorded. As is presented in Fig. 1, disputes ranged from 5 to 9 per seven hour school day with a mean frequency of 7.6.

Fig. 1 Goes about here

Ignore $_1$: Beginning on the tenth day of observation, whenever Mike began to dispute with the teacher, the teacher stopped all interaction with him by turning around and walking away. Whenever Mike began his assignment without arguing, however, the teacher praised him with a positive statement.

As can be seen in Fig. 1 there was a decrease in disputing behavior from the first day under these conditions. The mean number of disputes for the entire Ignore$_1$ phase was one per day.

Attend: In order to determine whether the change in Mike's behavior was due to the experimental conditions, a brief return to baseline conditions was instituted. When the teacher began attending to Mike when he argued and discontinued praise for not arguing, disputing behavior increased to a mean rate of 5.4.

Ignore $_2$: As can be seen in Fig. 1, when extinction of arguing and praise for not arguing behavior was reinstituted in the Ignore $_2$ phase, disputing behavior decreased to a mean rate of less than one such incident per day. Only one ad-

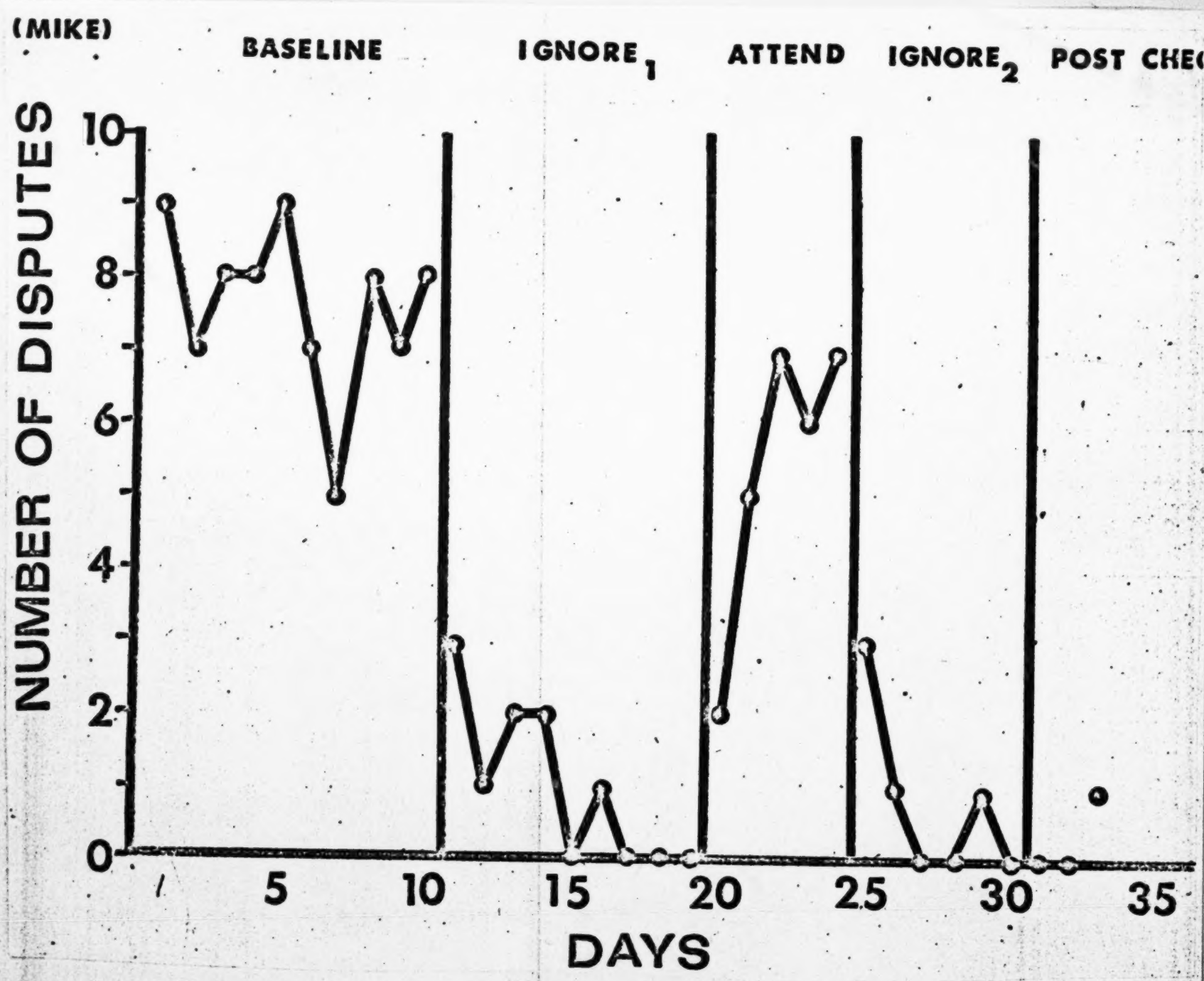

Fig. 1. A record of the disputing behavior of a junior highschool special education student. Baseline - prior to experimental procedures. Ignore$_1$ - Ignoring of disputing behavior and systematic attention to appropriate acceptance of assigned tasks. Attend - Reinstatement of attending to disputing behavior. Ignore$_2$ - return to ignoring of disputing behavior and attention to acceptance of assigned tasks. Post Checks - periodic checks after termination of the formal experiment.

ditional incident of disputing behavior was recorded during post-checks taken on three different days over a period of two weeks following the termination of daily recording. According to the teacher's report, six weeks after termination of the experiment, Mike's rate of disputing behavior was at such a low level it was no longer considered to be a problem.

Experiment 2

Subject and Setting: Johnny, the ten year old subject of the second experiment was a member of a classroom for educable mentally retarded children. Johnny was described by the teacher as being pivotal in maintaining classroom control; in that, if he was allowed to "talk out", the class was likely to imitate his behavior.

Observations: Talking out was recorded each time Johnny verbalized without the teacher's permission. Observations were made during a fifteen minute period each day. The teacher recorded the behavior on a wrist counter ordinarily used for tallying golf scored (see Technical Note, Lindsley, 1968). A fifteen minute time sample was used instead of recording the behavior over a full school day because the behavior was at a high rate and it would have been difficult for the teacher to record for a longer period.

The reliability of recording was evaluated by making a tape recording of each observation session. A tally was made of the tape recorded sessions and compared to the original wrist counter tally by the teacher-experimenter. An independent tally from the tape recordings was made by a fellow teacher as a further reliability check. The correspondence between these independently scored records was 100% for all phases of the experiment.

Baseline: After a period of refining the operational definition, the -talking out- behavior was recorded over a five day baseline period. Baseline data presented in Fig. 2 indicate a mean rate of four "talkouts" for Johnny during each fifteen minute period.

Fig. 2 Goes about here

Ignore$_1$: For the next five days following Baseline the teacher ignored Johnny's verbal behavior and reinforced incompatible behavior by giving him an enriched schedule of teacher attention when he was quiet and productive. Fig. 2 indicates that talking out decreased rapidly to zero by the fourth day of the Ignore$_1$ phase.

Attend: To be certain of a functional relationship between the change in Johnny's behavior and the experimental procedures, a retum to baseline was effected. Here, when the teacher attended to the talking out behavior, it increased in rate to near the Baseline level.

Ignore $_2$: When the original experimental procedures were resumed, the mean rate of the "talking out" behavior decreased to slightly more than one per session. Subsequent to the return to reinforcement procedures, the teacher declared that Johnny rarely verbalized without first gaining the teacher's permission and stated that the atmosphere of the classroom was greatly improved.

Experiment 3

Subjects and Setting: The subject, Jody, was a 13 year old boy in a junior high classroom for emotionally disturbed children. Jody and the 5 other members of

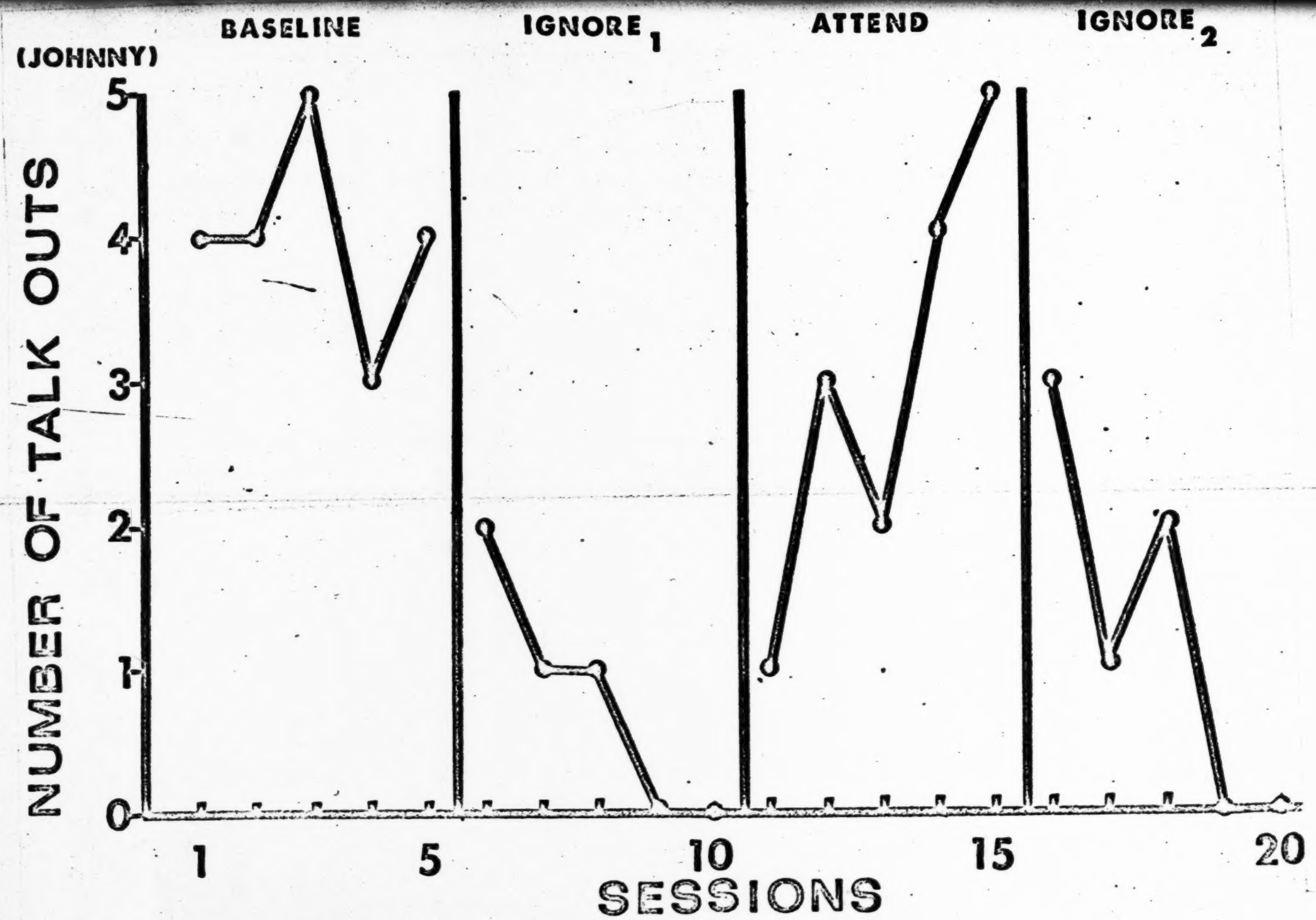

Fig. 2. A record of talking out behavior of a educable mentally retarded student. Baseline - prior to experimental conditions. Ignore$_1$ - systematic ignoring of talking out and increased teacher attention to appropriate behavior. Attend - reinstatement of teacher attention to talking out behavior. Ignore$_2$ - return to systematic ignoring of talking out and increased attention to appropriate behavior.

his class attended a school located in an upper middle class suburban area.

Observations: The teacher reported that even his classmates considered Jody to be disruptive. He displayed a number of inappropriate behaviors such as talking out, walking around the classroom, hitting other students and throwing objects. Talking out was of particular concern because it was emitted at an unusually high rate and increased the level of noise and caused confusion in the classroom. A previous attempt to modify the behavior by having the pupil wear a mask contingent on talking had been unsuccessful.

The teacher defined the behavior as any audible, verbal sound made without the teacher's permission. In order to be counted as a single response, each series of sounds had to be three seconds apart. The behavior was recorded for thirty minutes each day during reading period.

As in the previous study, a tape recorder was used in determining the reliability of observation. Reliability ranged from 95 to 100% through the various phases of the experiment.

Baseline: A ten day baseline revealed an extremely high operant level. Fig. 3 shows that the "talk outs" ranged from 36 to 98 per thirty minute period with a mean of 66.5.

Fig. 3 Goes about here

Feedback, Attention to Low Rates:

During the Feedback, Attention to Low Rates phase, Jody was shown a graph on which were recorded the number of his talk-outs. On days when the number dropped

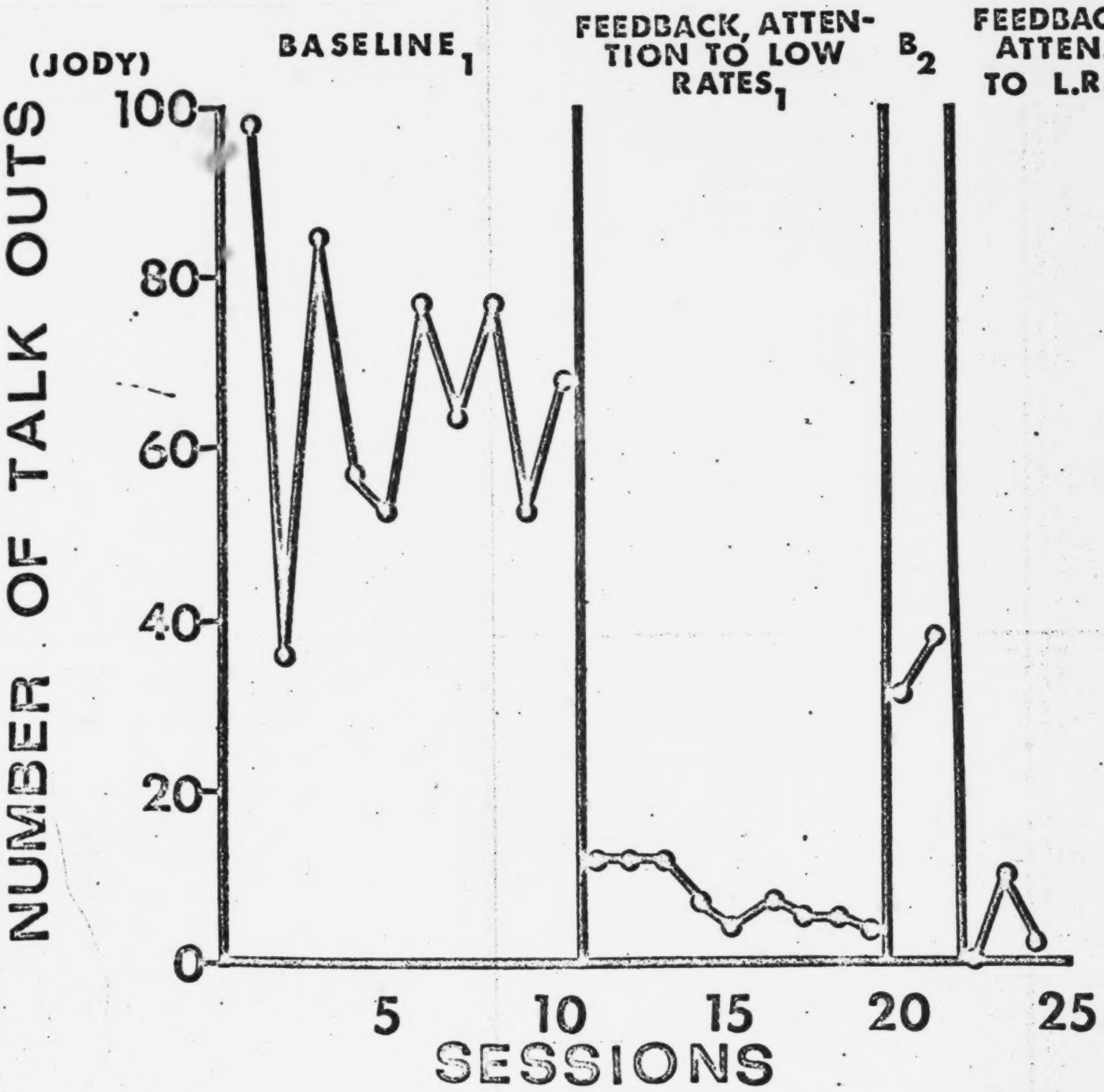

Fig. 3. A record of talking out behavior for a junior high emotionally disturbed student. Baseline - prior to experimental procedures. Feedback, Attention to Low Rates$_1$ - feedback and teacher attention to low rates of talking out. B_2 - return to baseline conditions of attention to talking out and no feedback. Feedback, Attention to Low Rates$_2$ - reinstatement of feedback and systematic teacher attention to low rates of talking out.

or remained at a low level, the teacher praised him. As is shown in Fig. 3 his rate of "talking out" decreased rapidly, ranging from 4 to 12 with a mean of 7.7 per session.

Baseline$_2$ (B_2):

A return to pre-experimental conditions produced an increase in talking out behavior. During B_2 the teacher attended to inappropriate verbal outbursts and ignored handraising. Fig. 3 shows this resulted in an increased rate tending toward that of the baseline condition with a mean of 34 "talk outs" per session.

Feedback, Attention to Low Rates$_2$:

Fig. 3 indicates that when the experimental procedures resumed, there was a concurrent decrease in talking out. The Feedback, Attention to Low Rates$_2$ condition was cut short by the termination of school.

Experiment 4

Subject and Setting: The subject of Experiment 4 was "normal" and was enrolled in a regular classroom of 27 third grade children. Peter, was a "large and very active" boy who also happened to be an only child. He was decribed by his teacher as a student who expected to receive the undivided attention of those about him.

Observation: The teacher selected a twenty minute discussion session at the beginning of math class as an observation period since she had noted a high rate of talking out at that time. She defined the behavior as any verbal response that accompanied hand raising before recognition by the teacher. As in previously mentioned studies the teacher used a wrist golf counter to record data. In order to check the reliability of measurement she asked a capable girl who was Peter's classmate to make a simultaneous record of Peter's "talk outs". The correspondence of their records

ranged from 60% to 91% with a mean of 81% for all phases of the experiment, Reliability dropped below 80% only once).

Baseline$_1$: Experiment 4 data are presented in Fig. 4. The mean number of "talk outs" computed for the ten days of Baseline$_2$ was 8.3 per 20 min. session.

Fig. 4 Goes about here

Ignore$_1$: On the eleventh day of observation the teacher began ignoring Peter if he displayed any verbal behavior while raising his hand. She also made a point of recognizing someone that was emitting the appropriate behavior; that is, sitting quietly while raising his hand. Besides not reinforcing Peter's talking out she called on him immediately when he raised his hand appropriately and generally added a smile or a word of praise.

By the fourth day of Ignore$_1$ the rate of talking out had dropped below the lowest of that during Baseline. The mean rate of talking out as indicated by Fig. 4 was 5.5 per session and decreasing in rate throughout the Ignore$_1$ phase.

Baseline$_2$ (B_2): On the sixteenth day a retum to baseline conditions was instituted. This resulted in a retum to near the level of responding recorded in the Baseline$_1$ phase.

Ignore$_2$: As indicated in Fig. 4, when the teacher resumed the ignoring of talking out and the supplying of social reinforcement for appropriate behavior a concurrent change was observed in the rate of Peter's inappropriate verbal behavior. Post checks revealed that this behavior continued to be emitted at a low rate.

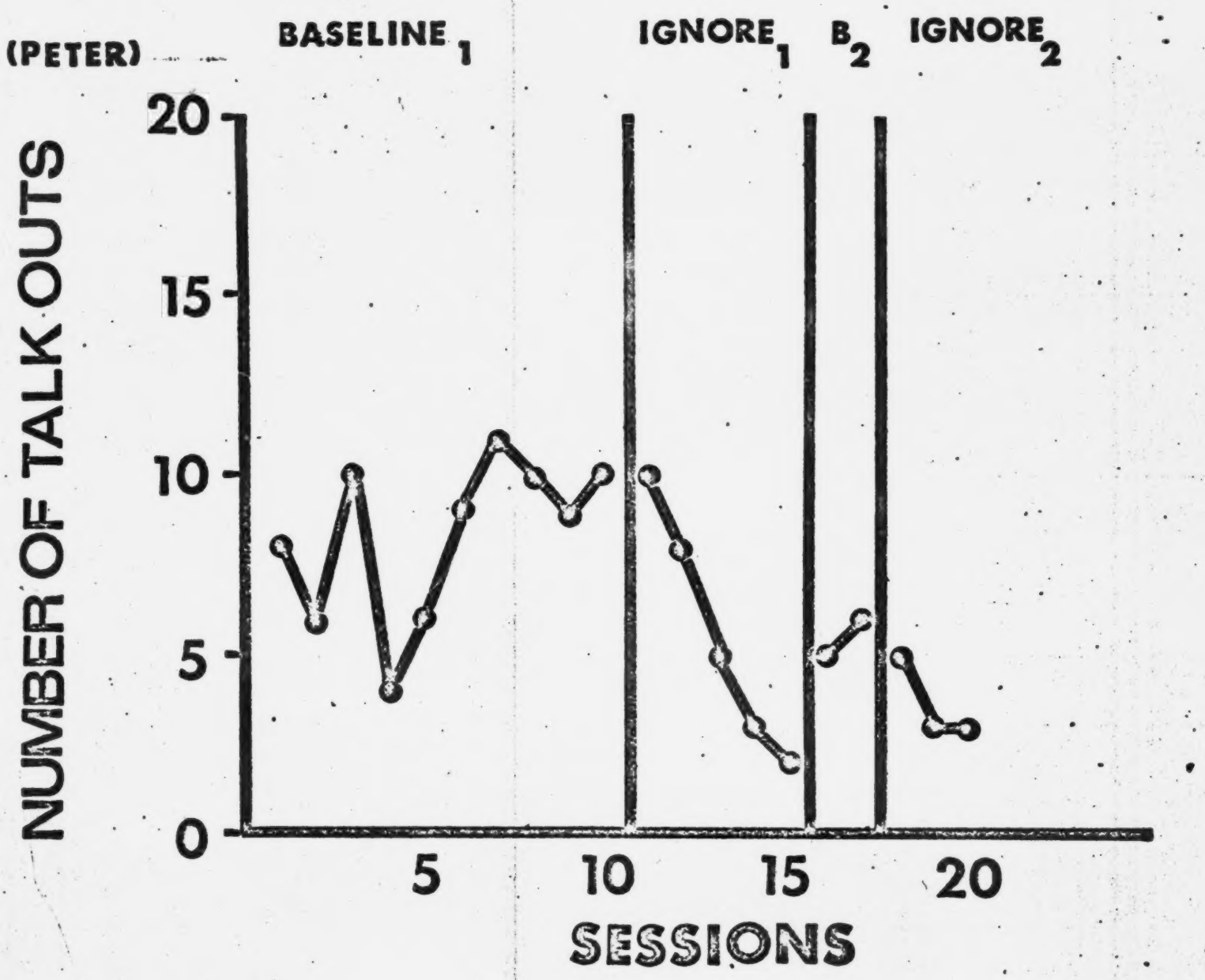

Fig. 4. A record of talking out behavior of a "normal" third grade student. Baseline - prior to experimental procedures. Ignore $_1$ - Systematic teacher attention for appropriate handraising and ignoring of talking out during hand raising. B_2 - Return to baseline conditions of teacher attending to talking out behavior. Ignore $_2$ - reinstatement of systematic attention to appropriate handraising and ignoring of talking out during handraising.

The teacher reported that not only had Peter's behavior improved but so had that of other pupils in his class.

Experiment 5

Subjects: The subjects of the fifth experiment were thirty members of a first grade class in a poverty area school. Although the pupils were described by the teacher as generally well-behaved they often talked out to the teacher during class even though they had often been reminded to raise their hands before speaking.

Observation Procedures: The teacher acted as the primary observer in recording "talk outs." Data were recorded daily from 9:00 - 10:00 a.m. during a discussion and seat-work activity period. A "talk out" was recorded on a tally sheet every time a pupil directed a verbalization toward the teacher without permission. Reliability checks were made by a teacher-aide assigned to the classroom. Checks made on the 17th and 20th days of Baseline and on the first ten days of the Reinforcement$_1$ phase yielded 100% agreement between observers.

Baseline$_1$: Baseline data were recorded over a four week period. As presented in Fig. 5 the mean "talk out" rate during Baseline$_1$ was about 16 per observation session.

Fig. 5 Goes about here

Praise Plus Access to Games for Handraising$_1$: During the planning period preceding the 21st observation session the teacher told the pupils that they would be allowed to play a favorite game at the end of the day if they remembered to raise their hands before talking to the teacher. She also began praising pupils when they remembered to raise their hands.

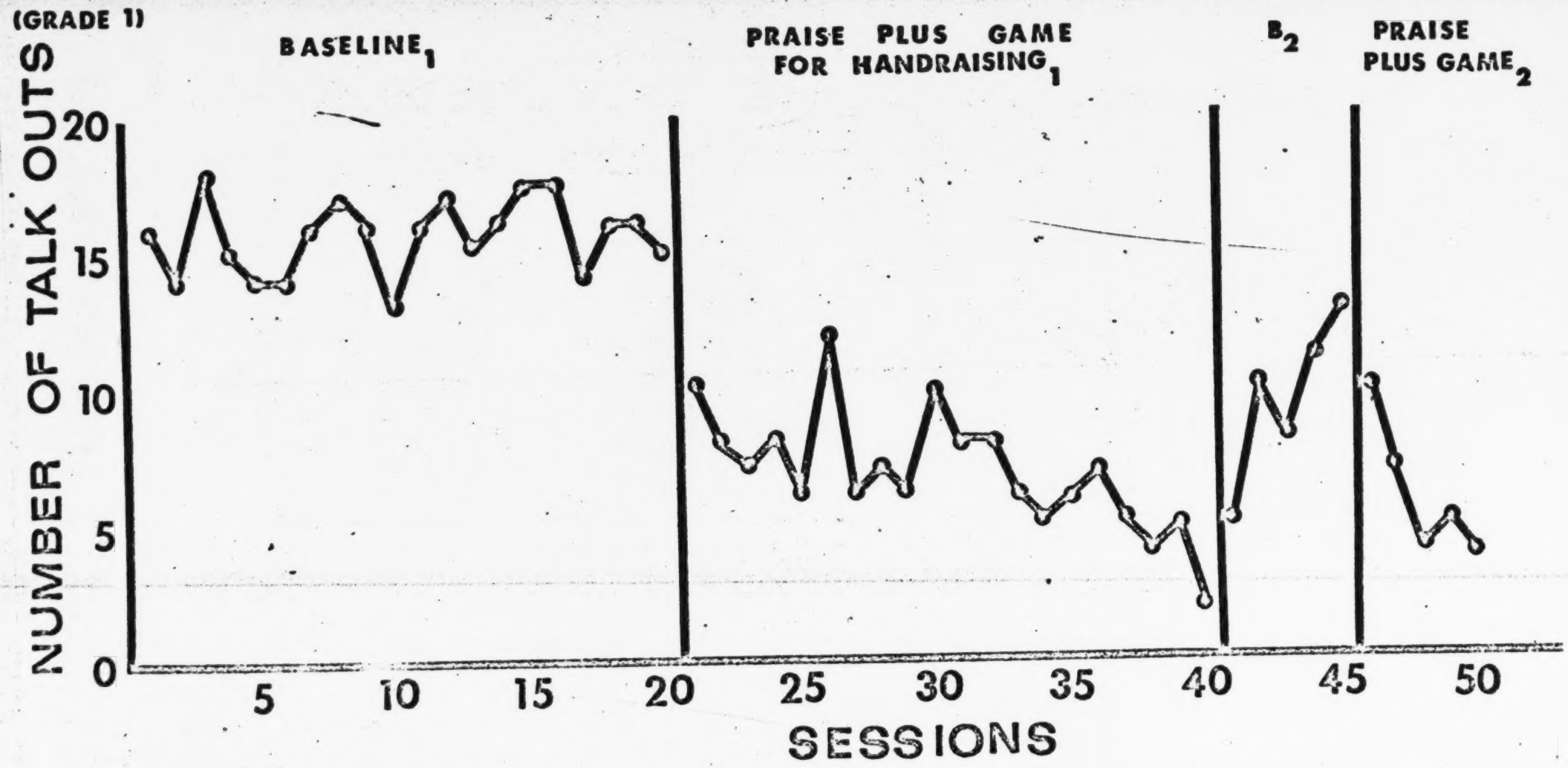

Fig. 5. A record of the number of "talk outs" during a one hour activity and discussion period in a first grade class of a poverty area school. Baseline $_1$ - prior to experimental procedures. Praise Plus Game For Handraising $_1$ - systematic praise and permission to play a favorite classroom game contingent on gaining permission prior to talking in class. B_2 - Return to baseline conditions by withdrawing praise and the opportunity to play a game for not talking. Praise Plus Game$_2$ - Reinstatement of reinforcement for not talking out.

As is shown in Fig. 5 the number of "talk outs" decreased throughout this phase although "talk outs" increased on the 26th and 30th days when visiting teachers and student teachers observed in the classroom.

Baseline$_2$ (B_2): At the beginning of the ninth week praise for remembering to raise hands and the opportunity to play a game was discontinued. After the first day under Baseline$_2$ conditions "talk outs" increased until by the end of the week they had reached a rate higher than at any time during the Praise Plus Access to Games for Handraising$_1$ phase.

Praise Plus Access to Games$_2$:

Praise and the opportunity to play a favorite game were reinstituted during the last week of the study which also marked the end of the school year. As can be seen in Fig. 5 the upward trend of "talk outs" observed during B_2 was reversed and "talk outs" returned to a low level.

Experiment 6

Subjects and Setting: Experiment 6 involved an entire classroom. The subjects were 27 pupils in the second grade of an urban poverty-area school. Although the pupils had been described by the teacher as a "good class," she was concerned because they often called out or talked to the teacher without permission. The teacher reported she often had to scold the class and consumed considerable time each day getting them quiet.

Observations: The behavior recorded was the number of instances in which pupils talked to the teacher without first gaining permission. One such event was recorded each time a child called the teacher's name, came to her desk to ask a question, or spoke to her from his seat without first raising his hand and being recognized by the

teacher. Data were recorded daily from 8:30 a.m. to 3:30 p.m. while class was in session on a hand-held counter which the teacher placed on her desk or carried with her as she moved about the room. Reliability checks were made by an outside observer sitting at the back of the room on the 15th and the 37th days. On both these occasions the number of "talk outs" recorded by the teacher and the observer was the same. Therefore the reliability was computed at 100%.

Baseline: Baseline data were recorded during a four week period prior to the first experimental phase. As can be seen in Fig. 5 the mean level of "talk outs" for the class was about 19 per day.

Fig. 6 Goes about here

Praise Plus a Favorite Activity: Beginning on the first day of the fifth week of the experiment the teacher began praising those who raised their hands to get permission to talk. At the close of the third day of the Praise plus a Favorite Activity condition the teacher let the children choose a favorite activity because only six pupils had talked out without permission. The children worked puzzles. On subsequent days when "talk outs" were at a low level they chose to play team games.

Straws Plus Surprize: At the beginning of the ninth week the teacher gave each pupil five straws. The pupils were told that the teacher would take away a straw on any day they talked out. They were also told they would be given a surprise at the end of the week contingent on the number of straws each possessed. As can be seen in Fig. 6 (Straws Plus Surprize) only two "talk outs" were recorded during an entire school week under these conditions. At the end of the fifth day the teacher gave each

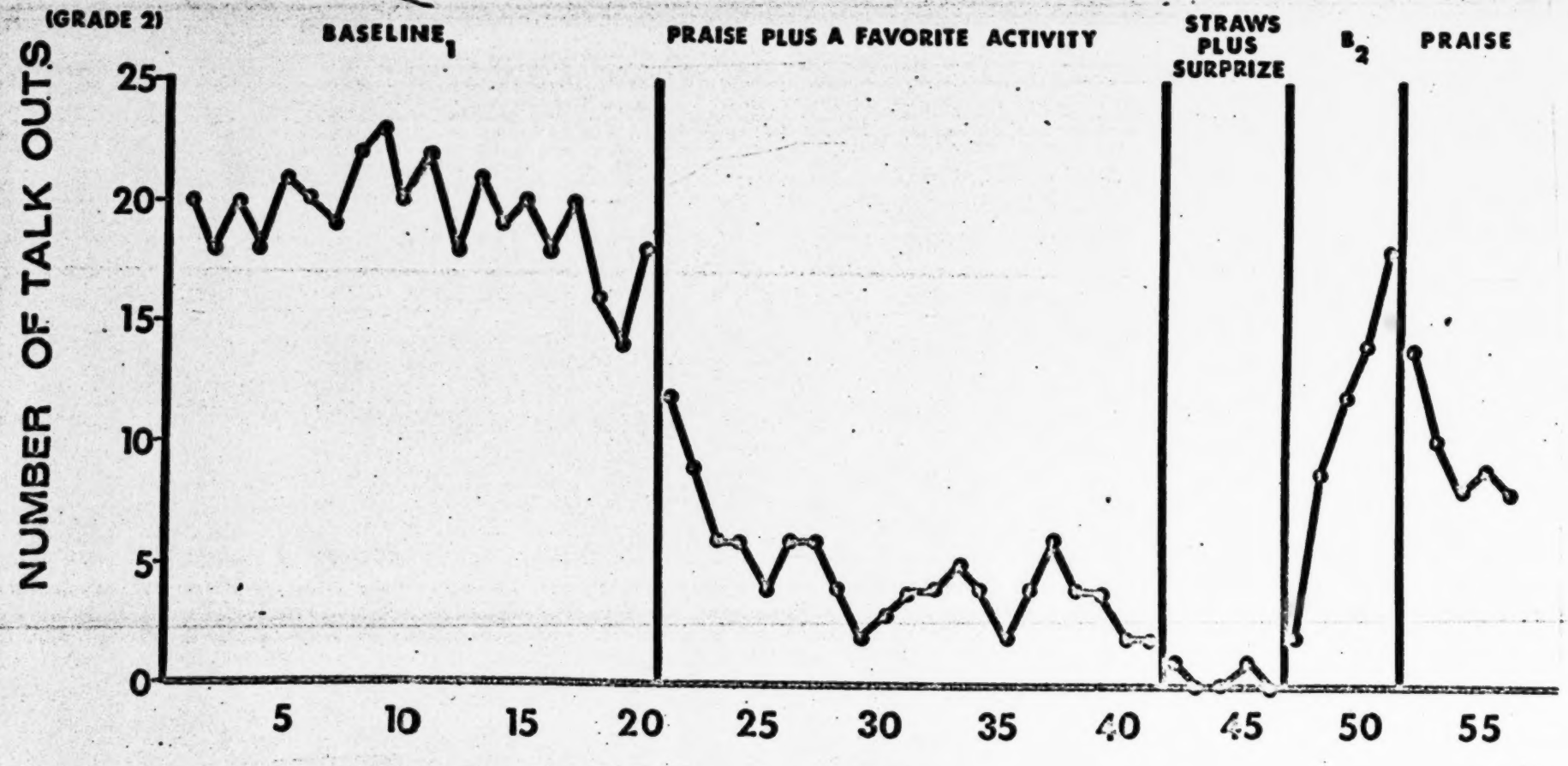

Fig. 6. A record of the daily number of "talk outs" in a second grade class in a poverty area school. Baseline$_1$ - Prior to experimental conditions. Praise Plus a Favorite Activity - systematic praise and permission to engage in a favorite classroom activity contingent on not talking out. Straws Plus Surprize - Systematic praise plus a token system (straws) backed by the promise of a surprize at the end of the week. B_2 - Withdrawal of reinforcement and reinstatement of attention to to talking out. Praise - Systematic teacher attention and praise for handraising and ignoring of talking out.

pupil a piece of candy for every straw he possessed.

Baseline$_2$: At the beginning of the tenth week a reversal of conditions was begun. The teacher discontinued praise for appropriate handraising and began answering those who talked out in class without raising their hands.

As can be seen in Fig. 6, after the first day under these conditions there was a dramatic increase in "talk outs." By the final day of Reversal "talk outs" had increased to near the mean Baseline$_1$ level.

Praise: In the final experimental phase the teacher once again began praising those who remembered to gain permission before talking and ignoring those who talked out. "Talk outs" decreased in rate in spite of the fact that no back up reinforcement was used and that it was the last week of school. The study was terminated by the close of school for summer vacation.

Discussion

The importance of these studies is not primarily their demonstration that "talking out" can be modified by using systematic reinforcement procedures. This has already been done (Barrish, Saunders and Wolf, 1969; Broden, Hall, 1969; Hanley, Wolf and Hall, 1970). Their greatest importance lies in the fact that they demonstrate that teachers can serve as experimenters as they teach and can carry out research in the classroom as they modify behaviors which are of concern.

In all these studies the primary experimenter and observer was the classroom teacher. Previously most related experiments have relied on outside experimenters and observers. These studies have demonstrated, however, that teachers can maximize convenience and efficiency in conducting experimental studies within the classroom without sacrificing scientific value and rigor.

The subjects of these studies ranged from single subjects to entire classroom groups. The pupils included "normal" children enrolled in regular classrooms of both white middle-class areas and all Negro disadvantaged areas. Others were pupils who had been classified as mentally retarded, or emotionally disturbed. They ranged in grade level from the first grade to junior highschool.

The recording techniques used varied from a simple paper and pencil tally to hand and wrist counters and tape recorders. In some cases where the behavior was of a relatively low frequency, the behavior was recorded over the entire day. In cases where the behavior was of a relatively high frequency shorter time samplings were used. This point is stressed since it would be extremely difficult for a teacher to tally a high rate behavior over long periods while teaching, yet it is not too difficult to sample such a behavior over a relatively short period. In experiments such as Experiment 2 and 3 a short time sample was adequate to indicate the levels of behavior during the various experimental phases.

Various means of checking the reliability of measurement were employed by the teachers. In one case the senior author acted as a second independent observer. In other cases, however, the teachers used a pupil, a teacher-aide, a tape recorder and a fellow teacher to check on the reliability of measurement. This demonstrated that teachers can obtain acceptable measures of reliability using resources which are intrinsic to the regular school environment.

In all of these studies, the teacher used a combination of extinction for inappropriate talking and some sort of reinforcing event for appropriate behavior to bring about the desired change. In Experiment 3 pupil knowledge of results was

also probably a factor during the reinforcement phases. In Experiment 5 the teacher used privileges and a classroom game to reinforce low levels of talking out, while the teacher in Experiment 6 used a token reinforcement system backed by a surprize at the end of the week to achieve a very low level of talking out.

The fact that talking out is a problem of concern to teachers is borne out by the fact that some form of talking out behavior was selected for modification by 23% of those enrolled in the behavior management classes which produced these studies. The fact that this behavior has been selected as a target behavior by other investigators, as was mentioned above, is also an indication that it is a behavior of general concern to teachers.

In summary, behavior modification shows great promise as an approach for helping teachers manage their classrooms. The development of techniques which allow teachers to measure the behaviors which concern them without drawing upon an outside observer will greatly increase their applicability since most teachers do not have a trained observer available. These studies suggest that teachers can develop effective observation and reinforcement procedures, can carry out experimental manipulations, and therefore can use behavioral analysis as a tool in their classrooms.

Footnotes

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2. The authors wish to express their appreciation to the administrators in the following school districts whose cooperation made this research possible. Kansas City, Kansas Public Schools, Olathe Kansas Public Schools, Roeland Park District Public Schools, and Shawnee Mission Unified School District. The authors also wish to thank Dr. Richard Whelan, Chairman of the Dept. of Special Education, University of Kansas for arranging for the classes which resulted in these studies. Reprints may be obtained from R. Vance Hall, Juniper Gardens Children's Project 2021 N. 3rd Street, Kansas City, Kansas 66101.

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